

## AMENDMENTS TO THE SPECIFICATION

Please replace the title on page 1 with the following amended title:

### ~~METHOD OF PRODUCING~~ NITRIDE-BASED HETEROSTRUCTURE DEVICES

Please replace the section starting on page 1, line 4 with the following amended sections:

#### REFERENCE TO PRIOR ~~APPLICATION~~ APPLICATIONS

The current application is a divisional of co-pending U.S. patent application serial no. 09/966,563, filed on 09/27/2001, which claims the benefit of U.S. priority to co-pending provisional application serial number 60/235,565, filed on 09/27/2000.

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The U.S. Government has a paid-up license in this invention and the right in limited circumstances to require the patent owner to license others on reasonable terms as provided for by the terms of VH0A950200-01 awarded by the U.S. Army SMDC/BMDO.

Please replace the paragraph starting on page 4, line 9 with the following amended paragraph:

~~Fig. 1 shows~~ Figs. 1a and 1b show the schematics of lattice mismatch (Fig. 1a) and band offset (Fig. 1b) in AlGa<sub>N</sub> and InGa<sub>N</sub> grown on GaN.

Please replace the paragraph starting on page 6, line 3 with the following amended paragraph:

Referring now to ~~Figure 1~~ Figures 1a and 1b, the schematics of lattice mismatch and band offset in AlGa<sub>N</sub> and InGa<sub>N</sub> grown on GaN are shown. As shown in ~~(a)~~ Figure 1a, strain free growth of 50% AlGa<sub>N</sub> on GaN 10 yields a positive lattice mismatch of roughly 0.003 nm. However, strain free growth of only 10% InGa<sub>N</sub> on GaN 12 is required to yield a similar negative lattice mismatch. As shown in ~~(b)~~ Figure 1b, the same 50% AlGa<sub>N</sub> on GaN 14 has a band offset of about 1.4 eV while the same 10% InGa<sub>N</sub> on GaN 16 has a band offset of only about 0.2 eV. Based on a linear extrapolation of lattice constants as functions of molar fractions, it is estimated that quaternary Al<sub>x</sub>In<sub>y</sub>Ga<sub>1-x-y</sub>N layers with an Al/In mole fraction ratio of 5 should be nearly lattice matched to GaN while the band offset will be about 1.2 eV.

Please replace the title on page 21 with the following amended title:

## **~~METHOD OF PRODUCING~~ NITRIDE-BASED HETEROSTRUCTURE DEVICES**